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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/670,619	09/25/2003	Ruan Lourens	068354.1365	6728

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EXAMINER	
ODOM, CURTIS B	
ART UNIT	**PAPER NUMBER**
2611	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	12/29/2006	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)
	10/670,619	LOURENS, RUAN
	Examiner	Art Unit
	Curtis B. Odom	2611

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on 25 September 2003.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-30 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-30 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on 25 September 2003 is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

DETAILED ACTION

Claim Objections

1. Claims 14, 16, 20, 22, 28, and 30 are objected to because of the following informalities:

a. Regarding claim 14, line 2, "the digital processor" is suggested to be changed to "a digital processor".

b. Regarding claim 16, the acronyms are suggested to be defined.

c. Regarding claims 20, 22, 28, and 30, "Q" is suggested to be defined as "Quality (Q) factor".

Appropriate correction is required.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which the subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 1-11, 14-18, 23, and 25-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Grindahl et al. (U. S. Patent No. 4, 786, 903) in view of Alley et al. (U. S. 6, 487, 264).

Regarding claim 1, Grindahl et al. discloses a super-regenerative receiver (see Fig. 1, column 3, lines 13-24), comprising:

a quenchable oscillator (Fig. 1, block 12, column 1, lines 58-59) the quenchable oscillator having a tuned tank circuit (Fig. 1, element 32, column 3, lines 31-33 and 49-65) approximately resonant at a frequency of a desired signal (see column 3, lines 49-52) and a signal output (output of element 32);

a quench circuit (Fig. 1, element 22, column 3, lines 3133) having a control input with high and low logic states (see column 4, lines 40-53), the quench circuit being coupled to the tuned tank circuit of the quenchable oscillator (as shown in Fig. 1) when the control input is in the high logic state (the transistors 34 and 46 are on, see column 3, lines 34-36), and the quench circuit being decoupled (disabled) from the tuned circuit of the quenchable oscillator (see column 3, lines 37-40) when the control input is in the low logic state (the transistors 34 and 46 are off, see column 4, lines 49-53); and

a signal detection circuit (Fig. 1, elements 14, column 4, lines 4-12), the signal detection circuit having an input coupled to the signal output of the quenchable oscillator (Fig. 1, element 12) and a control output (output of element 14) coupled to the control input of the quench circuit through the logic module (Fig. 1, element 22, see column 4, lines 49-53), wherein upon detection of the signal, the control output of the signal detection circuit is a pulse train (see column 4, lines 5-14) provided to the logic module to generate a logic level high or logic level low signal to turn on and off (control) the transistor (Fig. 1, element 46) of the quench circuit (see column 4, lines 40-53).

Grindahl et al. does not specifically disclose the controlling of the quench circuit comprises if a signal level from the signal output is greater than a certain value then the control output of the signal detection circuit is at the first logic level and if the signal level from the signal output is equal to or less than the certain value then the control output of the signal detection circuit is at the second logic level.

However, Alley et al. also discloses a super-regenerative receiver (see Fig. 6) including a quenchable oscillator (see column 2, lines 15-33). Geller further discloses the receiver contains a comparator (see Fig. 6, element 58) for also detecting signals (MDATA) by comparing a signal level to a reference magnitude (see column 4, lines 37-54). If the signal level is greater than the reference magnitude R, the comparator outputs MDATA, which stops the timer of the oscillations (see column 4, lines 55-60), thus stopping the oscillations (see column 11, lines 19-30) and creating a logic high quench signal to stop oscillations (see column 3, lines 19-33). If the signal is less than the reference magnitude, the quench signal remains in a low logic state and allows oscillations (see column 4, lines 26-45). Therefore, it would have been obvious to one skilled in the art at the time the invention was made control the quenching of an oscillator based on the detection of a received signal in Grindahl et al. as disclosed by Alley et al. since Alley et al. states this super-regenerative circuit has low power, low cost, and low component count (see column 2, lines 64-67).

Regarding claim 2, Grindahl et al. further discloses the tuned tank circuit is used as an antenna for reception of a signal (see column 3, lines 15-24).

Regarding claims 3, Alley et al. discloses the super-regenerative receiver comprises an antenna (see Fig. 6, element 22) for reception coupled to the quenchable oscillator (see Fig. 6,

elements 31 and 32. It would have been obvious to include this feature since Alley et al. states this super-regenerative circuit has low power, low cost, and low component count (see column 2, lines 64-67).

43).

Regarding claim 4, Alley et al. discloses an amplifier (see Fig. 6, element 36, column 3, lines 62-67) coupled to the quenchable oscillator, wherein the receiver including the amplifier operates at a plurality of selected frequencies (see column 4, lines 15-19). It would have been obvious to include this feature since Alley et al. states the receiver can operate on different frequencies of different channels (see column 3, lines 38-43).

Regarding claim 5, Grindahl et al. further discloses the quenched oscillator is an amplifier (see column 1, lines 56-61) which operate at multiple frequencies (see column 3, lines 7-10) and can be used for reception (see column 3, lines 15-20).

Regarding claim 6, Alley et al. discloses the amplifier (Fig. 1, element 36) is coupled to the antenna (Fig. 1, element 22) for reception. It would have been obvious to include this feature since Alley et al. states the receiver can operate on different frequencies of different channels (see column 3, lines 38-43).

Regarding claim 7, Grindahl et al. further discloses the oscillator is a Colpitts oscillator (see column 2, lines 20-31).

Regarding claim 8, Grindahl et al. further discloses the quench circuit is a resistor is series with a switch (see Fig. 1, element 22).

Regarding claim 9, Grindahl et al. further discloses the switch is a transistor (see Fig. 1, element 46, column 3, lines 34-36) coupled between a radio frequency ground and a resistor (see Fig. 1, element 22).

Regarding claims 10 and 11, Alley et al. further discloses the signal detection circuit is an operational amplifier/comparator (see Fig. 6, element 58) having a first input coupled to the signal output of the quenchable oscillator (see column 4, lines 46-60) and a second input coupled to a reference magnitude of a certain value. It would have been obvious to include this feature since Alley et al. states a super-regenerative circuit has low power, low cost, and low component count (see column 2, lines 64-67).

Regarding claims 14-16, Alley et al. further discloses the oscillator, quench circuit, comparator, and a digital processor (Fig. 6, block 25) of the super-regenerative receiver are fabricated on a printed integrated circuit board/package (see column 5, lines 49-54), wherein integrated circuit boards/packages include PDIP, SOIC, MSOP, etc. It would have been obvious to include this feature since Alley et al. states a super-regenerative circuit has low power, low cost, and low component count (see column 2, lines 64-67).

Regarding claim 17, Grindahl et al. further discloses a logic module (see Fig. 1, block 18) for digitally controlling the quench circuit (see column 4, lines 49-54).

Regarding claim 18, Grindahl et al. further discloses the quench circuit is used to provide a pulse amplitude modulated signal to the detector (see column 3, lines 59-65), to be demodulated (see column 4, lines 4-14).

Regarding claim 23, Grindahl et al. discloses a method for receiving a signal with a super-regenerative receiver (see Fig. 1, column 3, lines 13-24), the method comprising:

providing a quenchable oscillator (Fig. 1, block 12, column 1, lines 58-59), the quenchable oscillator having a tuned tank circuit (Fig. 1, element 32, column 3, lines 31-33 and 49-65) approximately resonant at a frequency of a desired signal (see column 3, lines 49-52) and a signal output (output of element 32);

providing a quench circuit (Fig. 1, element 22, column 3, lines 3133) having a control input with high and low logic states (see column 4, lines 40-53), the quench circuit being coupled to the tuned tank circuit of the quenchable oscillator (as shown in Fig. 1) when the control input is in the high logic state (the transistors 34 and 46 are on, see column 3, lines 34-36), and the quench circuit being decoupled (disabled) from the tuned circuit of the quenchable oscillator (see column 3, lines 37-40) when the control input is in the low logic state (the transistors 34 and 46 are off, see column 4, lines 49-53); and

providing a signal detection circuit (Fig. 1, elements 14, column 4, lines 4-12), the signal detection circuit having an input coupled to the signal output of the quenchable oscillator (Fig. 1, element 12) and a control output (output of element 14) coupled to the control input of the quench circuit through the logic module (Fig. 1, element 22, see column 4, lines 49-53), wherein upon detection of the signal, the control output of the signal detection circuit is a pulse train (see column 4, lines 5-14) provided to the logic module to generate a logic level high or logic level low signal to turn on and off (control) the transistor (Fig. 1, element 46) of the quench circuit (see column 4, lines 40-53).

Grindahl et al. does not specifically disclose detecting a signal level from the quenchable oscillator wherein if the detected signal level is greater than a certain value then coupling the quench circuit to the tuned circuit of the quenchable oscillator, and if the detected signal level is

less than or equal to the certain value then decoupling the quench circuit from the tuned circuit of the quenchable oscillator.

However, Alley et al. also discloses a super-regenerative receiver (see Fig. 6) including a quenchable oscillator (see column 2, lines 15-33). Geller further discloses the receiver contains a comparator (see Fig. 6, element 58) for also detecting signals (MDATA) by comparing a signal level to a reference magnitude (see column 4, lines 37-54). If the signal level is greater than the reference magnitude R, the comparator outputs MDATA, which stops the timer of the oscillations (see column 4, lines 55-60), thus stopping the oscillations (see column 11, lines 19-30) and creating a logic high quench signal to stop oscillations (see column 3, lines 19-33) and disable (decouple) the amplifier (oscillator) from the tuned circuit. If the signal is less than the reference magnitude, the quench signal remains in a low logic state and allows oscillations (see column 4, lines 26-45). Therefore, it would have been obvious to one skilled in the art at the time the invention was made control the quenching of an oscillator based on the detection of a received signal in Grindahl et al. as disclosed by Alley et al. since Alley et al. states this super-regenerative circuit has low power, low cost, and low component count (see column 2, lines 64-67).

Regarding claim 25, Grindahl et al. discloses fine tuning the tuned circuit to the frequency of the desired signal (see column 4, lines 42-48).

Regarding claim 26, further discloses the oscillator, quench circuit, comparator, and a digital processor (Fig. 6, block 25) of the super-regenerative receiver are fabricated on a printed integrated circuit board/package (see column 5, lines 49-54). It would have been obvious to

include this feature since Alley et al. states a super-regenerative circuit has low power, low cost, and low component count (see column 2, lines 64-67).

Regarding claim 27, Grindahl et al. further discloses the quench circuit is digitally controlled by logic module (see Fig. 1, element 18) and is used to provide a pulse amplitude modulated signal to the detector (see column 3, lines 59-65), to be demodulated (see column 4, lines 4-14).

4. Claims 12, 21, and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Grindahl et al. (U. S. Patent No. 4, 786, 903) in view of Alley et al. (U. S. 6, 487, 264) as applied to claims 1 and 23, and in further view of Midtgaard (US 2002/0093389).

Regarding claims 12, 21, and 29, Grindahl et al. and Alley do not disclose the oscillator has a DC bias point that is fixed.

However, Midtgaard discloses a balanced oscillator comprising two transistors with their bases connected to a fixed DC bias source (see section 0014). Therefore, it would have been obvious to one skilled in the art at the time the invention was made to implement a balanced oscillator in Grindahl et al. and Alley as disclosed by Midtgaard since Midtgaard states balanced oscillators enhance the isolation of the circuit from common mode disturbances (see section 0016).

5. Claims 13, 19, and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Grindahl et al. (U. S. Patent No. 4, 786, 903) in view of Alley et al. (U. S. 6, 487, 264) as applied to claims 1 and 23, and in further view of McEwan (U. S. Patent No. 5, 986, 600).

Regarding claims 13 and 19, Grindahl et al. and Alley et al. do not disclose the control input is delayed when changing logic states.

However. McEwan discloses a quenchable oscillator (see Abstract), wherein the quench signal provided to change the state of the oscillator is delayed (see column 9, lines 58-65). Both the control input when changing logic states to bias (tune) the oscillator and the control input when changing logic states to turn off the oscillator are delayed (see column 4, liens 30-45). Therefore, it would have been obvious to one skilled in the art at the time the invention was made to delay the control inputs as disclosed by McEwan since McEwan states controlling the amplitude outputs of the oscillator suppresses spurious modes (see column 1, lines 48-52).

Regarding claim 23, Grindahl et al. and Alley et al. do not disclose delaying decoupling of the quench circuit from the tuned circuit of the quenchable oscillator.

However. McEwan discloses a quenchable oscillator (see Abstract), wherein the quench signal provided to change the state of the oscillator is delayed (see column 9, lines 58-65). Both the control input when changing logic states to bias (tune) the oscillator and the control input when changing logic states to turn off the oscillator (decoupled from tuning) are delayed (see column 4, lines 30-45). Therefore, it would have been obvious to one skilled in the art at the time the invention was made to delay the control inputs as disclosed by McEwan since McEwan states controlling the amplitude outputs of the oscillator suppresses spurious modes (see column 1, lines 48-52).

6. Claims 20, 22, 28, and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Grindahl et al. (U. S. Patent No. 4, 786, 903) in view of Alley et al. (U. S. 6, 487, 264) as applied to claims 1 and 23, and in further view of McEwan (U. S. Patent No. 5, 630, 216).

Regarding claims 20 and 22, Grindahl et al. and Alley et al. do not disclose Q of the tuned circuit is substantially constant or Q of the tuned circuit is substantially linear for substantially all received strengths.

However, McEwan discloses optimizing the frequency of a quench oscillator to the constant Q of a tuned circuit, wherein the Q is defined by the inductance of the coupled network of the circuit such as an antenna (see column 6, lines 11-14). McEwan further discloses the Q is a linear value, wherein the Q value should be a small fraction of the duty cycle of the tuned circuit (see column 8, lines 54-64). Therefore, it would have been obvious to one skilled in the art to optimize the frequency of a quench oscillator to a constant Q at a small fraction of the duty cycle for all received strengths since McEwan states a Q proportional to a low duty cycle allows low power recovery of data (see column 8, lines 54-64).

Conclusion

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Sadowski (US 2004/0198288), Schleifer (U. S. Patent No. 6, 035, 002), and Forster (U. S. Patent No. 7, 046, 122) disclose super-regenerative receivers with quenchable oscillators.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Curtis B. Odom whose telephone number is 571-272-3046. The examiner can normally be reached on Monday- Friday, 8-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jay Patel can be reached on 571-272-2988. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Curtis Odom
December 26, 2006

JAY K. PATEL
SUPERVISORY PATENT EXAMINER